

## CLAIMS

What is claimed is:

- 5        1. A variable valve, comprising:
  - a valve body comprising a conduit defined therethrough;
  - a first cylinder having a first aperture, wherein the first cylinder is rotatable within the valve body between a first position and a second position; and
  - 10        a second cylinder having a second aperture, wherein the second cylinder is rotatable within the valve body between the first position and the second position;
  - such that the first aperture and the second aperture form a variable sized opening when the first cylinder and the second cylinder move from the first position toward the second position;
  - 15        wherein the variable sized opening defines a cross section by which a passage through the conduit is unrestricted.
2. The valve of claim 1, wherein the variable valve comprises a process valve.
- 20        3. The valve of claim 1, wherein the variable valve comprises an air valve.
4. The valve of claim 1, wherein the variable valve variable flow for any of a gas and a liquid.
- 25        5. The valve of claim 1, wherein the second cylinder moves in cooperation with the first cylinder.
6. The valve of claim 5, further comprising a gear assembly, comprising:
  - a first set of gears coupled to the first cylinder; and
  - 30        a second set of gears coupled to the second cylinder, wherein the first set of gears and the second set of gears are coupled to one another.
7. The valve of claim 1, wherein the variable sized opening is in a closed position when the first cylinder and the second cylinder are in the first position.
- 35        8. The valve of claim 1, wherein the first cylinder and the second cylinder are coupled to the valve body and configured in a predetermined position such that the variable sized opening is in communication with the conduit.

9. The valve of claim 1, further comprising an axle for driving the first cylinder and the second cylinder, wherein the axle is coupled to the block body.

5 10. The valve of claim 1, wherein the first cylinder and the second cylinder move in an opposite direction from one another.

11. The valve of claim 1, wherein the first cylinder and the second cylinder move in the same direction with one another.

10 12. The valve of claim 1 wherein the first cylinder rotates about an axis.

13. The valve of claim 1 wherein the second cylinder rotates about an axis.

15 14. A variable valve apparatus, comprising:

a body having a conduit;

a first cylinder coupled to the body, the first cylinder having a first aperture cut therethrough, wherein the first cylinder is rotatable between an open position and a closed position; and

20 a second cylinder coupled to the body, the second cylinder having a second aperture cut therethrough, wherein the second cylinder is configured to rotate between an open position and a closed position;

whereby the first aperture and the second aperture form a variable sized opening; and

25 wherein the first aperture and the second aperture define a cross section by which a passage through the conduit is unrestricted.

15. The valve apparatus of claim 14, wherein the variable valve comprises a process valve.

30 16. The valve apparatus of claim 14, wherein the variable valve comprises an air valve.

17. The valve apparatus of claim 14, wherein the variable valve provides variable flow for any of a gas and a liquid.

35 18. The valve apparatus of claim 14, wherein the first aperture and the second aperture do not form the opening when the first cylinder and the second cylinder are in the respective closed positions.

19. The valve apparatus of claim 14, wherein the body conduit comprises a process passage through the body, the first rotatable cylinder and the second rotatable cylinder, and further wherein the process passage is coupled to the body and configured in a predetermined position such that the conduit is in communication with the process passage.

20. The valve apparatus of claim 14, further comprising an axle coupled to the body for driving the first rotatable cylinder and the second rotatable cylinder.

21. The valve apparatus of claim 14, further comprising a gear assembly comprising:  
a first set of gears coupled to the first rotatable cylinder; and  
a second set of gears coupled to the second rotatable cylinder, wherein the first set of gears and the second set of gears are geared to one another.

22. The valve apparatus of claim 14, wherein the first rotatable cylinder and the second rotatable cylinder move in an opposite direction from one another.

23. The valve apparatus of claim 14, wherein the first rotatable cylinder and the second rotatable cylinder move in a same direction with one another.

24. The valve apparatus of claim 14, wherein the first aperture and the second aperture are both semi-circular and together form a circular opening.

25. A variable valve apparatus comprising:  
a body having a passage defined therethrough;  
a first cylinder coupled to the body, the first cylinder having a first aperture and configured to move between a first position and a second position; and  
a second cylinder coupled to the body, the second cylinder having a second aperture and configured to move between the first position and the second position;  
such that the first aperture and the second aperture form a variable sized opening when the first cylinder and the second cylinder move between the first position and the second position;  
such that in the respective first positions, the first aperture and the second aperture define a closed position to cut off flow, and in the respective second positions, the first aperture and the second aperture define a cross section by which the passage through the conduit is unrestricted.

26. The valve apparatus of claim 25, wherein the variable valve comprises a process valve.

27. The valve apparatus of claim 25, wherein the variable valve comprises an air valve.

5

28. The valve apparatus of claim 25, wherein the variable valve provides variable flow for any of a gas and a liquid.

10 29. The valve apparatus of claim 25, wherein the body is configured to allow a maximum amount of flow through the passage when in the second position.

30. The valve apparatus of claim 25, further comprising an axle for driving the first cylinder and the second cylinder, wherein the axle is coupled to the body.

15 31. The valve apparatus of claim 25, further comprising a gear assembly comprising:  
a first set of gears coupled to the first cylinder; and  
a second set of gears coupled to the second cylinder, wherein the first set of gears and the second set of gears are coupled to one another.

20 32. A valve apparatus of claim 25, wherein the first cylinder and the second cylinder are configured to rotate in cooperation with one another whereby the first aperture and the second aperture form the variable sized opening between the first position and the second position.

25 33. The valve apparatus of claim 25, wherein the first cylinder and the second cylinder rotate in an opposite direction from one another.

34. The valve apparatus of claim 25, wherein the first cylinder and the second cylinder move in a same direction with one another.

30

35. A method of assembling a variable valve apparatus, comprising the steps of:  
providing a body having a conduit, wherein the conduit is configured to have an open position and a closed position;  
coupling a first cylinder to the body, the first cylinder having a first aperture and configured to be moveable such that the first aperture is in complete communication with the conduit in the open position; and

coupling a second cylinder to the body, the second cylinder having a second aperture and configured to be moveable such that the second aperture is in complete communication with the conduit in the open position;

5 wherein the first aperture and the second aperture define a cross section by which a flow through the conduit is unrestricted when the first aperture and the second aperture are in the open position.

36. The method of claim 35, wherein the variable valve apparatus comprises a process valve.

10

37. The method of claim 35, wherein the variable valve apparatus comprises an air valve.

38. The method of claim 35, wherein the flow comprises any of a gas and a liquid.

15

39. The method of claim 35, wherein the first aperture and the second aperture are not in communication with the conduit when the first aperture and the second aperture are in the closed position.

20 40. The method of claim 35, wherein the body includes means for driving the first cylinder and the second cylinder, wherein the means for driving is coupled to the body.

41. The method of claim 35, wherein the body further comprises a gear assembly including:

25

a first set of gears coupled to the first cylinder; and

a second set of gears coupled to the second cylinder, wherein the first set of gears and the second set of gears are coupled to one another.

30

42. The method of claim 35, wherein the first cylinder and the second cylinder move in an opposite direction from one another.

43. The method of claim 35, wherein the first cylinder and the second cylinder move in a same direction with one another.

35

44. The method of claim 35, wherein the first cylinder is rotatably moveable about an axis.

45. The method of claim 35, wherein the second cylinder is rotatably moveable about an axis.

46. A valve comprising:

5 a body;

a first means for channeling a flow through the body; and

a second means for channeling the flow through the body;

wherein the first means and the second means are configured to rotatably move in an opposite direction from one another, thereby forming a variable sized aperture; 10 and

15 wherein the first means and the second means define a cross section by which the channeled flow through the body is unrestricted when the first means and the second means are in an open position, and wherein the first means and the second means define a cross section by which the channeled flow through the body is completely closed when the first means and the second means are in a closed position.

47. The valve of claim 46, wherein the valve comprises a process valve.

48. The valve of claim 46, wherein the valve comprises an air valve.

20 49. The valve of claim 46, wherein the flow comprises any of a gas and a liquid.

50. A variable valve comprising:

a first rotatable cylinder having a first aperture, wherein the first rotatable cylinder 25 rotates between a first position and a second position;

a second rotatable cylinder having a second aperture, wherein the second rotatable cylinder rotates in cooperation with the first rotatable cylinder such that the first aperture and the second aperture form a variable sized opening when the first rotatable cylinder rotates from the first position toward the second position;

30 wherein the first rotatable cylinder and the second rotatable cylinder define a cross section by which a flow through the valve is unrestricted when the first rotatable cylinder is in the first position, and wherein first rotatable cylinder and the second rotatable cylinder define a cross section by which the flow is closed when the first rotatable cylinder is in the closed position.

35 51. The valve of claim 50, wherein the variable valve comprises a process valve.

52. The valve of claim 50, wherein the variable valve comprises an air valve.

53. The valve of claim 50, wherein the flow comprises any of a gas and a liquid.

54. The valve of claim 50, further comprising a block body including a passage for allowing a process to pass through the block body, the first rotatable cylinder and the second rotatable cylinder, wherein the passage is configured in a predetermined position such that the variable sized opening is in communication with the passage.

55. The valve of claim 50, further comprising an axle for driving the first rotatable cylinder and the second rotatable cylinder, wherein the axle is coupled to the block body.

56. The valve of claim 50, further comprising a gear assembly comprising:  
a first set of gears coupled to the first rotatable cylinder; and  
a second set of gears coupled to the second rotatable cylinder, wherein the first set of gears and the second set of gears are coupled to one another.

57. The valve of claim 50, wherein the first rotatable cylinder and the second rotatable cylinder rotate in an opposite direction from one another.

20 58. The valve of claim 50, wherein the first rotatable cylinder and the second rotatable cylinder rotate in a same direction with one another.

59. A variable valve apparatus, comprising:  
a body having a conduit, wherein the conduit is configured to have an open position and a closed position;  
a first cylinder coupled to the body, the first cylinder having a first aperture and configured to be moveable such that the first aperture is in complete communication with the conduit in the open position; and  
a second cylinder coupled to the body, the second cylinder having a second aperture and configured to be moveable such that the second aperture is in complete communication with the conduit in the open position;  
wherein the first aperture and the second aperture define a cross section in the open position which does not restrict a passage of a flow through the conduit.

35 60. The apparatus of claim 59, wherein the variable valve comprises a process valve.

61. The apparatus of claim 59, wherein the variable valve comprises an air valve.

62. The apparatus of claim 59, wherein the flow comprises any of a gas and a liquid.

63. The apparatus of claim 59, wherein the first aperture and the second aperture are not in communication with the conduit when the first aperture and the second aperture are in the closed position.

5

64. The apparatus of claim 59, wherein the body comprises means for driving the first cylinder and the second cylinder, wherein the means for driving is coupled to the body.

10 65. The apparatus of claim 59, wherein the body further comprises a gear assembly including:  
a first set of gears coupled to the first cylinder; and  
a second set of gears coupled to the second cylinder, wherein the first set of gears and the second set of gears are coupled to one another.

15

66. The apparatus of claim 59, wherein the first cylinder and the second cylinder move in an opposite direction from one another.

20

67. The apparatus of claim 59, wherein the first rotatable cylinder and the second rotatable cylinder rotate in a same direction with one another.

68. The apparatus of claim 59, wherein the first cylinder is rotatably moveable about an axis.

25

69. The apparatus of claim 59, wherein the second cylinder is rotatably moveable about an axis.